

Amendments to the Specification:

Please replace the heading on page 1, line 5, with the following heading:

BACKGROUND OF THE INVENTION

Please add the following new heading on page 6, line 3:

BRIEF SUMMARY OF THE INVENTION

Please add the following new heading and paragraphs on page 9, line 1:

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 presents the expected and observed fragment patterns for the restriction digests of Example 1a.

Figure 2 presents the observed fragment patterns for BspEI-released internal control DNA restriction digests of Example 1c.

Figure 3 presents the observed fragment patterns for the restriction digests of Example 1b.

Figure 4 presents the expected and observed TRSPA-2 hybridization patterns for pNW33 using matrix 7 (Example 2).

Figure 5 presents the expected and observed TRSPA-2 hybridization patterns for pNW33 using matrix 17 (Example 2).

DETAILED DESCRIPTION OF THE INVENTION

Please replace the paragraph on page 109, line 9, though page 110, line 35, with the following amended paragraph:

BspEI sites define the outer ends of the 140 bp and the 200 bp fragments. The full sequence for pNW33 (**SEQ ID NO: 1**) is shown below:

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tcgcgcgtttcggatgacggtgaaaacctctgacacatgcagctcccgagacggtcacagcttgctgtaagcggatgccg
ggagcagacaagcccgtagggcgctcagcgggtgtggcggtgtcggggctggcttaactatcgggcatcagagcagat
tgtactgagagtgcaccatatgcggtgtgaaataccgcacagatgcgtaaggagaaaataccgcatcaggcgccattcgccatt
caggctgcgcaactgttgggaaggcgatcggtgcgggcctcttgcgtattacgccagctggcgaaaggggatgtgctgcaa
ggcgattaagtgggtaacgccagggtttccagtcacgacgttgtaaacgacggccagtgaattcgagctcggtaccgggc
ccccctcgaggctgacggtatcgataagcttgatcgagctggtaaccggacgccgcgtcgaagatgttggggtgtgtaa
caatatcgattccaattcagcgggggccacctgatatccttgtatttaattaaagacttcaagcggtaactatgaagaagtgtcg
tcttgcgtccagtaaggatccgcacttgaatttgaatcctgaaggatcgtaaaaacagctcttcttcaatctatacattaagac
gactcgaaatccacatatcaatatccgagtgtagtaaacattccaaaaccgtgatggaatggaacaacacttaaatgtacacct
ggtaatccgttttagaatccatgataataatttctggattattggtaattttttgcacgttcaaaatttttgcaaccccttttgaaac
aaacactacggtaggctgcgaaatgttcatactgttgagcaattcacgttcattataagcttttactgcatacgacgattctgtgatt
gtattcagcccatatcgttcatagcttctgccaaccgaacggacatttgaagtattccgcgtacgtgatgtcacctcgatatgtg
catctgtaaaagcaattgttcaggaaccaggggcgtatcttcatagccatggaatacgcccttttcagtgttgcgatgctaagcc
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gttacaaatattccgagcaccaagaatggctgcgcgttgcttggtacttgacgtcgtatttgacggggctccttgagaaagtattta
aactggaacacaatctgaggaatgatcaaagcaaccaacgccaacgcataataactagtgaataccaagacctcccaataata
gcaccagacttgtgaataacctctggctctgataattgctccagatggaattggacgatatggctcattaattgcgtcgatatctcta
tcataccagtcgttgattgtctgtgtatagccagtaagacaaggaccagacatcatcatgcaaagaatcgcttaagcccttcttggc
ctttatgaggatctctctgatttttctgcgtcgagtttccggtaagaccttccggtacttcgtccacaaacacaactcctccgcgcaa
cttttgcgggttgacttgactggccacgtaatccacgatctcttttccgtcatcgttttccgtgctccaaaacaacaacggcgg
cgggtccggattaccagctgcgatcaagcttatcgataccgtcgacctgcacctgcaggcatgaagcttggcgtaatcatggtc
atagctgtttctgtgtgaaattgtatccgctcacaattccacacacatacgagccggaagcataaagtgtaaagcctggggtg
cctaagtgtgagtaactcacattaattgcgttgcgctcactgcccgttccagtcgggaaacctgtcgtgccagctgcattaat
gaatcgccaacgcgcggggagaggcggttgcgtattggcgctcttccgcttctcgtcactgactcgtcgcgtcgtcg
ttcggctgcggcgagcgggtatcagctcactcaaaggcggtaatcaggttatccacagaatcaggggataacgcaggaaagaac
atgtgagcaaaaaggccagcaaaaaggccaggaaccgtaaaaaggccggttgcgtggcgttttccataggctccgccccctga
cgagcatcacaaaaatcgacgctcaagtcagagggtggcgaaacccgacaggactataaagataccaggcggttccccctggaa
gtcctctcgtcgcgtctctgttccgacctgcccgttaccggatacctgtccgcttctccttcgggaagcgtggcgcttctc
atagctcacgctgtaggtatctcagttcgggtgtaggtcgttcgctccaagctgggctgtgtgcacgaacccccgttcagcccga
ccgctgcgccttatccgtaactatcgtcttgagccaacccggaagacacgacttatcgcactggcagcagccactggtaac
aggattagcagagcgaggtatgtagcggtgctacagagttctgaagtggcctaactacggctacactagaaggacagta
tttggtatctgcgtctgctgaagccagttaccttcggaaaaagagtggttagctcttgatccggcaacaaaccaccgctgtag
cgggtggtttttgttgcaagcagcagattacgcgcagaaaaaaaggatctcaagaagatccttgatctttctacggggtctgac
gtcagtggaacgaaaactcacgttaagggttttggtcatgagattacaaaaaggatcttcacctagatccttttaataaaaaat
gaagtttaaatcaatctaaagtatatatgagtaaaacttggctgacagttaccaatgcttaatcagtgaggcacctatctcagcgatc
tgtctatttcgttcatccatagttgcctgactccccgtcgtgtagataactacgatacgggagggttaccatctggccccagtgtg
caatgataccgcgagaccacgctcaccggctccagatttatcagcaataaaccagccagccggaaggggcgcgagcagaa
gtggtcctgcaactttatccgctccatccagctattaattgttgccgggaagctagagtaagtagttgccagttaatagtttgcg
caacgttggtgccattgctacaggcatcgtggtgtcacgctcgtcgtttggtatggcttcattcagctccggttccaacgatcaag
gcgagttacatgatccccatgttggtgcaaaaaagcgggttagctccttcggctcctccgatcgttgtcagaagtaagttggccgcag
tgttatcactcatggttatggcagcactgcataattcttactgtcatgccatccgtaagatgctttctgtgactggtgagtactcaa

ccaagtcattctgagaatagtgtatgcggcgaccgagttgctcttcccggcgtaatacgggataataccgcgccacatagca
gaactttaaagtgctcatcattggaaaacgttcttcggggcgaaaactctcaaggatcttaccgctgttgagatccagttcgatgt
aaccctcgtgcacccaactgatcttcagcatcttttactttcaccagcgtttctgggtgagcaaaaacaggaaggcaaaatgcc
gcaaaaaagggaataagggcgacacggaaatgttgaaactcactcttcttttcaatattattgaagcatttatcagggttattg
tctcatgagcggatacatatttgatgtatttagaaaaataaacaataggggttccgcgcacattccccgaaaagtgccacctga
cgtctaagaaccattattatcatgacattaacctataaaaataggcgtatcacgaggccctttcgtc **(SEQ ID NO: 1)**

Please replace the paragraph on page 115, lines 7-13, with the following amended paragraph:

Primers and PCR

20 μ M BIO140UP

5' biotin-CGCAGCTGGTAATCCGGACGCCCGCGTCGAAGATGTT 3'

(SEQ ID NO: 2)

20 μ M BIO200DOWN

5' biotin-CGCAGCTGGTAATCCGGACCCGCCGCGTTGTTGTT 3'

(SEQ ID NO: 3)

Please replace the paragraph on page 119, lines 9-16, with the following amended paragraph:

After digestion, 20 μ l of digests 1-7 were mixed with 10 μ l of 50 % glycerol AGE loading dye and 4 μ l of digests 1-7ic were mixed with 2 μ l of 50 % glycerol AGE loading

dye. Digests in loading dye were then electrophoresed on a 2.5 % MetaPhor™ agarose gel in 1x TBE. The gel was stained for 60 min in 500 ml of 1x TBE containing 50 µl of Vistra Green. The stained gel was finally imaged on a Fluorimager with the following settings: a 488 nm laser; a 570 DF 30 filter; a PMT setting of 700 V; 200 µm resolution; and low sensitivity.

Please replace the paragraph on page 121, line 6, though page 122, line 22, with the following amended paragraph:

HindIII and EcoRI sites define the outer ends of the 25 bp and the 40 bp fragments. The sequence of pNW35 (SEQ ID NO: 4) is shown below with the inserted region shown in bold type:

atgacatgattacgccaagctctaatacgactcactatagggaaagcttccggacgtctcaggctaattgttgccaccgac
gttccacgatggggcgctcttaagggcttagaccctcgctgggagatattctgtgatctggcgacactcacgcgagaagtc
attaccggcgatatgaattcactggccgctcggtttacaacgctgctgactgggaaaaccctggcggtacccaacttaatcgcttg
cagcacatcccccttgcgacgtggcgtaatagcgaagaggcccgaccgatcgccctccaacagttgctgcagcctgaat
ggcgaatgggaaattgtaaacgttaatattttgttaaaatcgcggttaaattttgttaaatcagctcatttttaaccaataggccgaaa
tcggcaaaatccctataaatcaaaagaatagaccgagatagggttgagtgtgtccagtttgaacaagagtcactattaaag
aacgtggactccaacgtcaaagggcgaaaaaccgtctatcaggcgcatggccactacgtgaaccatcacctaataagttttt
tggggctcgaggtgccgtaaacactaaatcggaaccctaagggagcccccgatttagagcttgacggggaaagccggcgaa
cgtggcgagaaaggaaggggaagaaagcgaaaggagcggcgctaggcgctggcaagtgtagcggtcacgctgcgcgta
accaccacaccgccgcgcttaatgcgccgtacaggcgcgctcaggtggcacttttcggggaaatgtgcgcggaaccctat
ttgtttatttttctaatacatcattcaaatatgtatccgctcatgagacaataaccctgataaatgcttcaataatattgaaaaaggaagagt
atgagtattcaacatttcggtgcgccctattccctttttgcggcattttgccttctgttttgctcaccagaaacgctgggtgaaagt
aaaagatgctgaagatcagttgggtgcacgagtggttacatgaactggatctcaacagcggtgaagatccttgagagttttcgc
cccgaagaacgtttccaatgatgagcacttttaagtctgctatgtggcgcggtattatcccgattgacgccgggcaagagca

actcggtcgccgcatacactattctcagaatgacttggtgagtactcaccagtcacagaaaagcatcttacggatggcatgacag
taagagaattatgcagtgctgccataacatgagtataactgcggccaacttactctgacaacgatcggaggaccgaagg
agctaaccgctttttgcacaacatgggggatcatgtaactgccttgatcgttggaaccggagctgaatgaagccatacaaaa
cgacgagcgtgacaccacgatgcctgtagcaatggcaacaacgttgcgcaactattaactggcgaactacttactctagcttcc
cggcaacaattaatagactggatggaggcggataaagttgcaggaccacttctgcgctcggccctccggctggctggtttattg
ctgataaatctggagccggtgagcgtgggtctcgcggtatcattgcagcactggggccagatggttaagccctcccgatcgtagt
tatctacacgacggggagtcaggcaactatggatgaacgaaatagacagatcgtgagataggtgcctcactgattaagcattg
gtaactgtcagaccaagtttactcatatatacttttagattgatttaaaacttcatttttaatttaaaaggatctaggtgaagatccttttga
taatctcatgacaaaaatcccttaacgtgagtttctccactgagcgtcagaccccgtagaaaagatcaaaggatcttcttgat
ccttttttctgcgcgtaatctgctgcttgcaacaaaaaaaccaccgctaccagcgggtgtttgttgcggatcaagagctacca
actcttttccgaaggtaactggcttcagcagagcgcagatacacaactgtccttctagttagccgtagtaggcccaccacttc
aagaactctgtagcaccgcctacatacctcgtctgtaactcgttaccagtggctgctgccagtggcgataagtcgtgtcttacc
gggttgactcaagacgatagttaccggataaggcgcagcggctcgggctgaacgggggggtcgtgcacacagcccagcttgg
agcgaacgacctacaccgaactgagatacctacagcgtgagctatgagaaagcggcacgctcccgaaggagaaaggcgg
acaggatatccggtaagcggcagggcgggaacaggagagcgcacgaggagcttccagggggaacgcctggtatctttatag
tcctgtcgggtttgccacctctgacttgagcgtcgattttgtgatgctcgtcaggggggcggagcctatggaaaaacgccagc
aacgcggccttttacggttcctggcctttgctggcctttgctcacatgttcttctcgttatccctgattctgtggataaccgtat
taccgcctttgagtgagctgataccgctcggcgagccgaacgaccgagcgcagcgagtcagtgagcgaggaagcgggaaga
gcgccaatacgaacccgctctccccgcgcgttgccgattcattaatgcagctggcacgacaggttcccgactggaaagc
gggcagtgagcgaacgaattaatgtgagttagctcacttaggcaccccaggcttacctttatgcttccggctcgtatgtt
gtgtggaattgtgagcggataacaattcacacaggaaacagct **(SEQ ID NO: 4)**

Please replace the paragraph on page 123, lines 3-7, with the following amended paragraph:

Primers and PCR

U-19 mer bio primer 5' bio-GTTTTCCCAGTCACGACGT 3'

(SEQ ID NO: 5)

ICPCR(F) primer 5' TCCGGACGTCTCAGGCTAATGTT 3'

(SEQ ID NO: 6)

Please replace the paragraph on page 129, line 12, through page 130, line 13, with the following amended paragraph:

Oligonucleotides

*Bam*HI short PCR primer 5' TGTAACGACACATTGCTGGATACC 3'

(SEQ ID NO: 7)

*Hind*III short PCR primer 5' ATATAACTCTCGCTCCTTGATAAC 3'

(SEQ ID NO: 8)

*Nco*I short PCR primer 5' AGGCGTCTGAGGCTGCGGCTATGG 3'

(SEQ ID NO: 9)

*Spe*I short PCR primer 5' AACCCGTCGCGACGAGAGTCTAAG 3'

(SEQ ID NO: 10)

*Afl*III short PCR primer 5' GATATACGTGATATATTTTGATTG 3'

(SEQ ID NO: 11)

*Bam*HI adaptor 5' pGATCGGTATCCAGCAATGTGTCGTTACA 3'
(SEQ ID NO: 12)

*Hind*III adaptor 5' pAGCTGTTATCAAGGAGCGAGAGTTATAT 3'
(SEQ ID NO: 13)

*Nco*I adaptor 5' pCATGCCATAGCCGCAGCCTCAGACGCCT 3'
(SEQ ID NO: 14)

*Spe*I adaptor 5' pCTAGCTTAGACTCTCGTCGCGACGGGTT 3'
(SEQ ID NO: 15)

*Afl*III adaptor 5' pTTAACAATCAAAATATATCACGTATATC 3'
(SEQ ID NO: 16)

*Bam*HI long PCR primer 5' TGTAACGACACATTGCTGGATACCGATCC 3'
(SEQ ID NO: 17)

*Hind*III long PCR primer 5' ATATAACTCTCGCTCCTTGATAACAGCTT 3'
(SEQ ID NO: 18)

*Nco*I long PCR primer 5' AGGCGTCTGAGGCTGCGGCTATGGCATGG 3'
(SEQ ID NO: 19)

*Spe*I long PCR primer 5' AACCCGTCGCGACGAGAGTCTAAGCTAGT 3'
(SEQ ID NO: 20)

*Afl*III long PCR primer 5' GATATACGTGATATATTTTGATTGTTAAG 3'
(SEQ ID NO: 21)

Luc140down primer
5' GCGCTAGGGATCCTTACTGGGACGAAGACGAA 3'
(SEQ ID NO: 22)

Luc140up-bio primer

5' biotin-CGCAGCTGGTAATCCGGACGCCCCGCGTCGAAGATGTT3'

(SEQ ID NO: 23)

Please replace the paragraph on page 138, lines 6-32, with the following amended paragraph:

Clone #1

Mutant sequence (#1M)

5'CCCGGGGGATCCTCGTTTTATTGGGCCGAGTTTTGGTCCGTAGTGCTTGGTT
AGATATGCTTAT
3'GGGCCCCCTAGGAGCAAATAAACCCGGCTCAAACCAGGCATCACGAACC
AATCTATACGAATA

G TTCACAAAATCATCCTTGTACAGAATTC3' **(SEQ ID NO: 24)**
CAAGTGTTTTAGTAGGAACATGTCTTAAG5'

Control sequence (#1C)

5'CCCGGGGGATCCTCGTTTTATTGGGCCGAGTTTTGGTCCGTAGTGCATGGTT
AGATATGCTTAT
3'GGGCCCCCTAGGAGCAAATAAACCCGGCTCAAACCAGGCATCACGTACCA
ATCTATACGAATA

G TTCACAAAATCATCCTTGTACAGAATTC3' **(SEQ ID NO: 25)**

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CAAGTGTTTTAGTAGGAACATGTCTTAAG5'

Clone #7

Control sequence (#7C)

5'CCCGGGTGTACACAAAAGTTTACCTGAAGAACGTGGGGGGTCGTGCCTGGT
CTTGCGTCACCTG
3'GGGCCCACATGTGTTTTCAAATGGACTTCTTGCACCCCCCAGCACGGACCA
GAACGCAGTGGAC

GTCTCAGGAGAGGGTCCCCATGGGAATTC3' (SEQ ID NO: 26)
CAGAGTCCTCTCCAGGGGTACCCTTAAG5'

Please replace the paragraph on page 139, lines 6-8, with the following amended paragraph:

Oligonucleotides

BIOUPST2 5' bio-CTACTGATCGGATCCCCG 3' (SEQ ID NO: 27)
BIODOWN3 5' bio-AAACGACGGCCAGTGAAT 3' (SEQ ID NO: 28)

Please replace the paragraph on page 141, lines 4-7, with the following amended paragraph:

Oligonucleotides

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BIOUPST2 5' bio-CTACTGATCGGATCCCCG 3' (SEQ ID NO: 29)
DOWN3 5' bio-AAACGACGGCCAGTGAAT 3' (SEQ ID NO: 30)

Please replace the paragraph on page 145, lines 4-8, with the following amended paragraph:

Oligonucleotides

#1 probe oligo 5' GGCCGAGTTTTGGTCCGTAG 3' (SEQ ID NO: 31)

#7 probe oligo 5' GTCTTGCGTCACCTGGTCTCAG 3' (SEQ ID NO: 32)

At the end of the written description, before the claims, please delete the previously submitted "Sequence Listing" and insert the revised "Sequence Listing" attached hereto.